学位の種類	博士（医学）
報告番号	甲第１８０７号
学位記番号	第１２８５号
氏名	黒川　良太
授与年月日	令和3年 3月 24日
学位論文の題名	The diagnostic utility of the frequency scale for the symptoms of gastroesophageal reflux disease questionnaire (FSSG) for patients with subacute/chronic cough （遷延性/慢性咳嗽患者の診断におけるFSSG質問票の有用性） Journal of Asthma. 2020 Aug 12;1-10. doi: 10.1080/02770903.2020.1805750.
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ABSTRACT

Background: Subacute/chronic cough often hampers patients' quality of life and causes labor difficulties. Gastroesophageal reflux disease (GERD) is one of the most common causes of subacute/chronic cough worldwide, including Japan. The frequency scale for the symptoms of GERD (FSSG) questionnaire, which originally consists of acid-reflux and dysmotility symptom domains, is a succinct questionnaire to evaluate GERD symptoms.

Objectives: To evaluate the utility of subjective questionnaire of GERD for the diagnosis of GERD-related cough by using FSSG questionnaire.

Methods: From April 2012 to March 2018, 312 patients with never or light smoking history (< 10 pack-years) visited our clinic due to subacute/chronic cough. Of these, 256 patients (168 females) who could examine both the FSSG questionnaire and blood eosinophil counts were investigated. GERD-related cough was inferred through the presence of classic reflux symptoms including heartburn and/or typical coughing trigger (e.g. phonation, rising, lying, eating, and intake of certain food). The diagnosis was confirmed by response to specific treatments for GERD. Receiver operating characteristic curve analysis was performed to determine the cutoff score for the diagnosis.

Results: One-hundred ten patients (43%) were diagnosed as having GERD-related cough as a cause of subacute/chronic cough. Patients with GERD-related cough showed significantly higher FSSG scores than those without GERD-related cough [11.4 (7.6) vs 6.5 (5.9), $p < 0.001$]. Levels of fractional exhaled nitric oxide were significantly lower in patients with GERD-related cough than those without [22.1 (14.9) vs 27.8 (25.3), $p = 0.03$]. FSSG questionnaire was relevant for diagnosing GERD-related cough, with the area under the curve (AUC) of 0.70 ($p < 0.001$, cutoff score 7 points, sensitivity 75%, specificity 62%). When limited to patients with blood eosinophils of 150/lL or those with sputum eosinophils of 3%, sensitivity and specificity of the diagnosis were increased, respectively (sensitivity and specificity; 79% and 65% for blood eosinophils and 82% and 68% for sputum eosinophils, $p < 0.001$, AUC 0.74 for both).

Conclusions: The FSSG would be a practicable questionnaire to help the diagnosis of GERD-related cough in patients with subacute/chronic cough, particularly in patients with low blood or sputum eosinophil counts.